CLAIMS

That which is claimed is:

1. A method for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, the method comprising the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

sorting the order of arrangement of the rows of data in the n x m matrix based on a comparison of the values of a pseudo-data vector with values of the data items, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

reordering the order of arrangement of the rows of data in the n x m matrix based on the sort performed; and

displaying d rows of the rearranged rows of data in the n x m matrix for observation by a user.

2. The method of claim 1, further comprising the steps of :

providing at least one row of descriptive data characterizing said data items in a j x m matrix adjacent said n x m matrix, wherein $j \geq 1$;

selecting a row from said at least one row of descriptive data; and

converting the selected row of descriptive data to said pseudo-data vector.

3. The method of claim 2, wherein said descriptive data comprises binary data.

4. The method of claim 2, further comprising displaying said at least one row of descriptive data adjacent the display of the first c x d graphical representations.

5. The method of claim 2, further comprising displaying said at least one row of descriptive data adjacent the d number of rearranged rows.

6. The method of claim 2, further comprising color-coding cells of the at least one row of descriptive data, said color-coding representing a function of the values of the descriptive data in the cells.

7. The method of claim 3, further comprising color-coding cells of the at least one row of descriptive data, said color-coding representing the binary values of binary data.

8. The method of claim 2, wherein said converting the selected row of descriptive data to said pseudo-data vector comprises substituting pseudo-data values for the descriptive data values contained in the cells of the selected row of descriptive data.

9. The method of claim 8, wherein at least one cell of the selected row lacks a descriptive data value, and wherein, upon said substituting pseudo-data values, said at least one cell lacking a descriptive data value is assigned a predefined null value.

10. The method of claim 3, wherein said converting the selected row of descriptive data to said pseudo-data vector comprises substituting predefined pseudo-data values for the positive and negative descriptive binary data values contained in the cells of the selected row of descriptive data.

11. The method of claim 8, further comprising inverting the predefined pseudo-data values that are used to substitute for the descriptive data values.

12. The method of claim 1, wherein said sorting comprises similarity sorting the rows of the n x m matrix, wherein the rows are processed to determine a relative similarity value to the pseudo-data vector, and wherein upon reordering, all rows are repositioned in

descending order from row one, based on ranking by the relative similarity values, and wherein d rows of the reordered m x n matrix are then displayed.

13. The method of claim 12, wherein a relative similarity value is determined by calculating a distance value between the pseudo-data vector and a vector generated from a row to be assigned the similarity value, wherein values corresponding to each cell of a pseudo-data row from which the pseudo-data vector was generated are compared with the respective cell values from the row that the vector was generated from.

14. The method of claim 13, wherein the distance value is determined by calculating a squared Euclidean distance between the two vectors.

15. The method of claim 13, wherein the distance value is determined by calculation of the Pearson correlation coefficient relative to the two vectors..

16. The method of claim 1, further comprising generating said pseudo-data vector from arbitrary data values.

17. The method of claim 1, further comprising generating said pseudo-data vector from values inputted by a user.

18. The method of claim 1, further comprising selecting at least a portion of a row in said n x m matrix; and

converting the row from which the at least a portion of a row was selected to said pseudo-data vector.

19. The method of claim 18, wherein said converting the row to said pseudo-data vector comprises substituting a predefined pseudo-data value for emphasizing each cell in said at least a portion of the row selected, to be emphasized during the sorting procedure, and substituting a value for de-emphasizing any cell in the row that was not selected.

20. The method of claim 19, wherein the predefined pseudo-data value for emphasizing is a positive value having been inputted by a user.

21. The method of claim 19, wherein said value for de-emphasizing is a null value.

22. The method of claim 19, wherein said value for de-emphasizing is a predefined negative pseudo-data value.

23. A method for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, the method comprising the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of a pseudo-data vector with values of the data items in each of m rows, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

reordering the order of arrangement of the first x rows of data in the n x m matrix, wherein $x \leq m$ and is a preset positive integer, based on the sort performed; and

displaying d rows of data in the n x m matrix for observation by a user.

24. The method of claim 23, further comprising specifying a window size s characterizing a window defining a number of cells in a pseudo data row to be emphasized when generating the pseudo-data vector therefrom and initializing an index value w to zero;

assigning a predefined positive pseudo-data value to each of the first s cells in the pseudo data row, and assigning a predefined negative pseudo-data value to each of the remaining cells to generate said pseudo-data vector.

25. The method of claim 24, further comprising specifying an increment value t characterizing a number of cells to increment said window for generation of a revised pseudo-data vector;

incrementing said window by a number of cells equal to increment value t, and incrementing the index value w by one;

assigning the predefined positive pseudo-data value to each of the s cells selected by said window after said incrementing, and assigning the predefined negative pseudo-data value to each of the remaining cells to generate said revised pseudo-data vector;

sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of the revised pseudo-data vector with values of the data items in each of m – (w*x) rows, wherein said (w*x) rows are the rows that have already been previously reordered; and

reordering the order of arrangement of the first x rows of data form the sorted m – (w*x) rows, positioning them in rows beginning with the first row having not yet been reordered.

26. The method of claim 25, further comprising repeating the steps of claim 24 until no reordered rows remain or until $(w*t) \geq n$.

27. The method of claim 26, further comprising displaying all m rows of the reordered data in a compressed view and simultaneously displaying d rows of the reordered data in an uncompressed view.

28. The method of claim 27, further comprising selecting which d rows of reordered data to be displayed in the uncompressed view by selecting from the compressed view.

29. The method of claim 23, wherein the sorting comprises similarity sorting, and wherein the rows of data are each processed to determine a relative similarity value to the pseudo-data vector.

30. The method of claim 29, wherein the relative similarity value is determined by calculating a distance value between the pseudo-data vector and a data vector generated from the row to be assigned the similarity value, wherein each cell of a pseudo data row from which the pseudo-data vector was generated is compared with a respective cell in the row from which the data vector was generated.

31. The method of claim 30, wherein the distance value is determined by calculating a squared Euclidean distance between the two rows.

33. The method of claim 30, wherein the distance value is determined by calculation of the Pearson correlation coefficient relative to the two rows.

34. The method of claim 25, wherein the sorting comprises similarity sorting, and wherein the rows of data are each processed to determine a relative similarity value to the revised pseudo-data vector.

35. The method of claim 34, wherein the relative similarity value is determined by calculating a distance value between the revised pseudo-data vector and a data vector generated from the row to be assigned the similarity value, wherein each cell of a revised pseudo data row from which the revised pseudo-data vector was generated is compared with a respective cell in the row from which the data vector was generated.

36. The method of claim 35, wherein the distance value is determined by calculating a squared Euclidean distance between the two rows.

37. The method of claim 35, wherein the distance value is determined by calculation of the Pearson correlation coefficient relative to the two rows.

38. A method for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, the method comprising the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each row of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same row represents the same characteristic, although the values of said data items in the same row may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

sorting the order of arrangement of the columns of data in the n x m matrix based on a comparison of the values of a pseudo-data vector with values of the data items, wherein each column of data items is converted to a data vector for comparison with said pseudo-data vector;

reordering the order of arrangement of the columns of data in the n x m matrix based on the sort performed; and

displaying c columns of the rearranged columns of data in the n x m matrix for observation by a user.

39. A method for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, the method comprising the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a different characteristic described the data items, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying the first c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

selecting a row or column in the displayed c x d matrix;

sorting the order of arrangement of the entities in the n x m matrix based on a comparison of the values of the identified data items in the row or column of the n x m matrix corresponding to the row or column selected from the displayed c x d matrix;

reordering the order of arrangement of the entities in the n x m matrix based on the sort performed; and

displaying the first c x d graphical representations of the identified data items from the reordered n x m matrix for observation by a user, for visual identification of changes in the relationships between the graphical representations.

40. A method comprising forwarding a result obtained from the method of claim 1 to a remote location.

41. A method comprising transmitting data representing a result obtained from the method of claim 1 to a remote location.

42. A method comprising receiving a result obtained from a method of claim 1 from a remote location.

43. A system for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, comprising:

means for providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

means for converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

means for displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

means for sorting the order of arrangement of the rows of data in the n x m matrix based on a comparison of the values of a pseudo-data vector with values of the data items, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

means for reordering the order of arrangement of the rows of data in the n x m matrix based on the sort performed; and

means for displaying d rows of the rearranged rows of data in the n x m matrix for observation by a user.

44. The system of claim 43, further comprising the steps of :

means for providing at least one row of descriptive data characterizing said data items in a j x m matrix adjacent said n x m matrix, wherein $j \geq 1$;

means for selecting a row from said at least one row of descriptive data; and

means for converting the selected row of descriptive data to said pseudo-data vector.

45. The system of claim 44, further comprising means for substituting pseudo-data values for the descriptive data values contained in the cells of the selected row of descriptive data.

46. The system of claim 45, further comprising means for inverting the pseudo-data values that are used to substitute for the descriptive data values.

47. The system of claim 43, wherein said means for sorting comprises means for similarity sorting the rows of the n x m matrix, wherein the rows are processed to determine a relative similarity value to the pseudo-data vector, and wherein upon reordering, all rows are repositioned in descending order from row one, based on ranking

by the relative similarity values, and wherein d rows of the reordered m x n matrix are then displayed.

48. The system of claim 43, further comprising means for generating said pseudo-data vector from arbitrary data values.

49. The system of claim 43, further comprising means for generating said pseudo-data vector from values inputted by a user.

50. The system of claim 43, further comprising means for selecting at least a portion of a row in said n x m matrix; and

means for converting the row from which the at least a portion of a row was selected to said pseudo-data vector.

51. A system for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, comprising:

means for providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

means for converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

means for displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

means for sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of a pseudo-data vector with values of the data items in each of m rows, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

means for reordering the order of arrangement of the first x rows of data in the n x m matrix, wherein $x \leq m$ and is a preset positive integer, based on the sort performed; and

means for displaying d rows of data in the n x m matrix for observation by a user.

52. The system of claim 51, further comprising means for specifying a window size s characterizing a window defining a number of cells in a pseudo data row to be emphasized when generating the pseudo-data vector therefrom and means for initializing an index value w to zero;

means for assigning a predefined positive pseudo-data value to each of the first s cells in the pseudo data row, and assigning a predefined negative pseudo-data value to each of the remaining cells to generate said pseudo-data vector.

53. The system of claim 52, further comprising means for specifying an increment value t characterizing a number of cells to increment said window for generation of a revised pseudo-data vector;

means for incrementing said window by a number of cells equal to increment value t, and means for incrementing the index value w by one;

means for assigning the predefined positive pseudo-data value to each of the s cells selected by said window after said incrementing, and assigning the predefined negative pseudo-data value to each of the remaining cells to generate said revised pseudo-data vector;

means for sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of the revised pseudo-data vector with values of the data items in each of m – (w*x) rows, wherein said (w*x) rows are the rows that have already been previously reordered; and

means for reordering the order of arrangement of the first x rows of data form the sorted m – (w*x) rows, positioning them in rows beginning with the first row having not yet been reordered.

54. The system of claim 53, further comprising means for repeating the steps of claim 53 until no reordered rows remain or until $(w*t) \geq n$.

55. The system of claim 54, further comprising means for displaying all m rows of the reordered data in a compressed view and simultaneously displaying d rows of the reordered data in an uncompressed view.

56. A computer readable medium carrying one or more sequences of instructions for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

sorting the order of arrangement of the rows of data in the n x m matrix based on a comparison of the values of a pseudo-data vector with values of the data items, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

reordering the order of arrangement of the rows of data in the n x m matrix based on the sort performed; and

displaying d rows of the rearranged rows of data in the n x m matrix for observation by a user.

57. The computer readable medium of claim 56, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further steps of:

providing at least one row of descriptive data characterizing said data items in a j x m matrix adjacent said n x m matrix, wherein $j \geq 1$;

selecting a row from said at least one row of descriptive data; and

converting the selected row of descriptive data to said pseudo-data vector.

58. The computer readable medium of claim 56, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform

59. The computer readable medium of claim 56, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further step of generating said pseudo-data vector from values inputted by a user.

60. The computer readable medium of claim 56, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further steps of selecting at least a portion of a row in said n x m matrix; and converting the row from which the at least a portion of a row was selected to said pseudo-data vector.

61. A computer readable medium carrying one or more sequences of instructions for displaying and manipulating data to facilitate identification, trends, correlations or other useful relationships among the data, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

providing data items arranged in an n x m matrix, n equaling the number of columns in the matrix and m equaling the number of rows in the matrix, and wherein each column of the matrix relates to a characteristic described by the data items therein, wherein each said data item in the same column represents the same characteristic, although the values of said data items in the same column may differ from one another;

converting said data items, to determine graphical representations of said identified data items to be displayed, wherein the graphical representations graphically represent variations in the values of the data items;

displaying c x d graphical representations of the identified data items in a c x d matrix, where $c \leq n$ and $d \leq m$, with each graphical representation from the first c x d representations occupying a corresponding cell in the c x d matrix displayed;

sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of a pseudo-data vector with values of the data items in each of m rows, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector;

reordering the order of arrangement of the first x rows of data in the n x m matrix, wherein x $\leq$m and is a preset positive integer, based on the sort performed; and

displaying d rows of data in the n x m matrix for observation by a user.

62. The computer readable medium of claim 61, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further steps of specifying a window size s characterizing a window defining a number of cells in a pseudo data row to be emphasized when generating the pseudo-data vector therefrom and initializing an index value w to zero; assigning a predefined positive pseudo-data value to each of the first s cells in the pseudo data row, and assigning a predefined negative pseudo-data value to each of the remaining cells to generate said pseudo-data vector.

63. The computer readable medium of claim 62, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further steps of:

specifying an increment value t characterizing a number of cells to increment said window for generation of a revised pseudo-data vector;

incrementing said window by a number of cells equal to increment value t, and incrementing the index value w by one;

assigning the predefined positive pseudo-data value to each of the s cells selected by said window after said incrementing, and assigning the predefined negative pseudo-data value to each of the remaining cells to generate said revised pseudo-data vector;

sorting the order of arrangement of data in the n x m matrix, based on a comparison of the values of the revised pseudo-data vector with values of the data items in each of m – (w*x) rows, wherein said (w*x) rows are the rows that have already been previously reordered; and

reordering the order of arrangement of the first x rows of data form the sorted m – (w*x) rows, positioning them in rows beginning with the first row having not yet been reordered.

64. The computer readable medium of claim 63, wherein execution of one or more sequences of instructions by one or more processors causes the one or more processors to perform the further steps of repeating the steps of claim 62 until no reordered rows remain or until (w*t) $\geq$n.